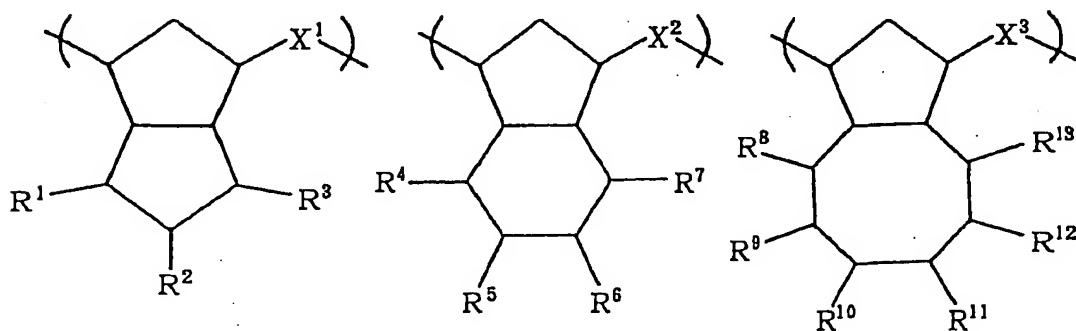


CLAIMS

1
2
3 1. A ring-opened cycloolefin copolymer which is a ring-
4 opened cycloolefin copolymer or hydrogenated ring-opened
5 cycloolefin copolymer comprising a structural unit (A)
6 represented by the following general formula (1-1), the
7 following general formula (1-2) or the following general
8 formula (1-3) and a structural unit (B) represented by the
9 following general formula (2) in a proportion of 10:90 to 70:30
10 in terms of a molar ratio,

11 wherein a monomer for obtaining the structural unit (A)
12 contains an endo form in a proportion of at least 80 mol% and
13 the copolymer has a glass transition temperature of 120 to
14 250°C:

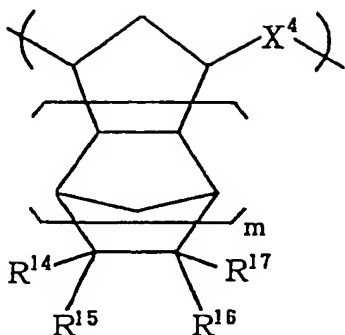
15 General formula (1-1) General formula (1-2) General formula (1-3)



16

17 wherein in the general formulae (1-1) to (1-3), R¹ to R¹³
18 independently represent a group selected from a hydrogen atom,
19 halogen atoms, and alkyl groups and halogenated alkyl groups
20 having 1 to 4 carbon atoms, and X¹ to X³ mean individually an
21 ethylene group or vinylene group; and

22 General formula (2)



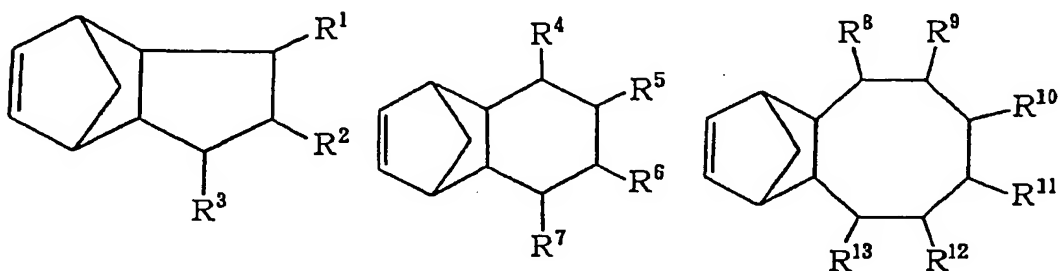
23

24 wherein in the general formula (2), m is 1 or 2, X^4 means an
 25 ethylene group or vinylene group, and R^{14} to R^{17} independently
 26 represent a hydrogen atom, a halogen atom, an alkyl group
 27 having 1 to 20 carbon atoms, a cycloalkyl group, an aryl group,
 28 an alkenyl group, a halogenated hydrocarbon group, an alkylene
 29 group formed by bonding R^{14} or R^{15} to R^{16} or R^{17} , a group
 30 represented by $-(CH_2)_kZ$ or a group formed by bonding R^{14} or R^{15} to
 31 R^{16} or R^{17} and represented by $-(CH_2)_k-C(O)O-$, with the proviso
 32 that at least one of R^{14} to R^{17} is a group represented by $-(CH_2)_kZ$
 33 or a group represented by $-(CH_2)_k-C(O)O-$, in which k is an
 34 integer of 0 to 3, Z is a group represented by $-C(O)O-R^{18}$ or -
 35 $OC(O)-R^{19}$, and R^{18} and R^{19} represent individually a hydrocarbon
 36 group or halogenated hydrocarbon group having 1 to 10 carbon
 37 atoms.

1 2. The ring-opened cycloolefin copolymer according to
 2 claim 1, wherein a monomer for obtaining the structural unit
 3 (A) represented by the general formula (1-1), general formula
 4 (1-2) or general formula (1-3) is a tricyclomonoolefin compound
 5 represented by the following general formula (3-1), the

6 following general formula (3-2) or the following general
 7 formula (3-3), and a proportion of an endo form in the
 8 tricyclomonoolefin compound is at least 80 mol%:

9 General formula (3-1) General formula (3-2) General formula (3-3)



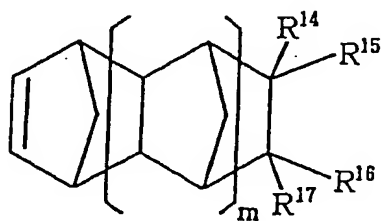
10
 11 wherein in the general formulae (3-1) to (3-3), R^1 to R^{13}
 12 independently represent a group selected from a hydrogen atom,
 13 halogen atoms, and alkyl groups and halogenated alkyl groups
 14 having 1 to 4 carbon atoms.

1 3. The ring-opened cycloolefin copolymer according to
 2 claim 1 or 2, which comprises a structural unit (C) derived
 3 from a cycloolefin compound having a hydrolyzable silyl group
 4 or an oxetanyl group in its side chain in a proportion of 0.1
 5 to 30 mol% based on the whole structural unit.

1 4. The ring-opened cycloolefin copolymer according to
 2 claim 3, which is crosslinked by the hydrolyzable silyl group
 3 or the oxetanyl group.

1 5. The ring-opened cycloolefin copolymer according to
 2 claim 1, wherein at least a part of the structural unit (A) is
 3 a structural unit derived from tricyclo[5.2.1.0^{2,6}]dec-8-ene.

1 6. A process for producing a ring-opened cycloolefin
 2 copolymer, which comprises the step of ring-opening
 3 polymerization of a monomer composition containing a monomer,
 4 which is composed of a tricyclomonoolefin compound represented
 5 by the general formula (3-1), the general formula (3-2) or the
 6 general formula (3-3) set forth in claim 2, and in which a
 7 proportion of an endo form in the tricyclomonoolefin compound
 8 is at least 80 mol%, and a monomer represented by the following
 9 general formula (4) in a proportion of 10:90 to 70:30 in terms
 10 of a molar ratio:
 11 General formula (4)



12
 13 wherein in the general formula (4), m is 1 or 2, and R^{14} to R^{17}
 14 independently represent a hydrogen atom, a halogen atom, an
 15 alkyl group having 1 to 20 carbon atoms, a cycloalkyl group, an
 16 aryl group, an alkenyl group, a halogenated hydrocarbon group,
 17 an alkylene group formed by bonding R^{14} or R^{15} to R^{16} or R^{17} , a
 18 group represented by $-(CH_2)_kZ$ or a group formed by bonding R^{14} or
 19 R^{15} to R^{16} or R^{17} and represented by $-(CH_2)_k-C(O)O-$, with the
 20 proviso that at least one of R^{14} to R^{17} is a group represented by
 21 $-(CH_2)_kZ$ or a group represented by $-(CH_2)_k-C(O)O-$, in which k is
 22 an integer of 0 to 3, Z is a group represented by $-C(O)O-R^{18}$ or
 23 $-OC(O)-R^{19}$, and R^{18} and R^{19} represent individually a hydrocarbon

24 group or halogenated hydrocarbon group having 1 to 10 carbon
25 atoms.

1 7. The production process of the ring-opened cycloolefin
2 copolymer according to claim 6, wherein the monomer composition
3 is hydrogenated after the ring-opening copolymerization.
4 treatment.

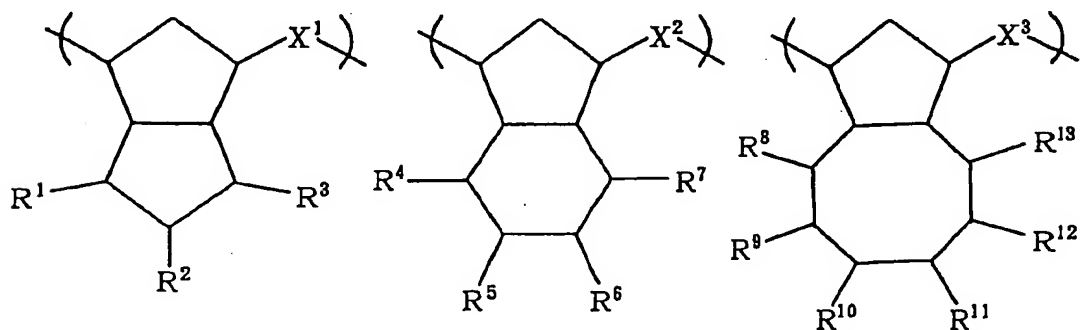
1 8. An optical material comprising the ring-opened
2 cycloolefin copolymer according to claim 1.

ABSTRACT

Disclosed herein are a ring-opened cycloolefin copolymer excellent in optical properties such as transparency, low in water (moisture) absorption property, high in affinity for other materials, good in post processing properties such as adhesive property and printability, and excellent in heat resistance and mechanical strength, a production process thereof, and an optical material.

The ring-opened cycloolefin copolymer of the invention contains a structural unit (A) represented by any one of general formulae (1-1) to (1-3) and a structural unit (B) derived from a specific cycloolefin having an ester group in a proportion of 10:90 to 50:50 in terms of a molar ratio, wherein a monomer for obtaining the structural unit (A) is a tricyclomonoolefin compound containing an endo form in a proportion of at least 80 mol% and has a glass transition temperature of 120 to 250°C:

General formula (1-1) General formula (1-2) General formula (1-3)



wherein in the general formulae (1-1) to (1-3), R^1 to R^{13} individually represent a group selected from a hydrogen atom,

halogen atoms, and alkyl groups and halogenated alkyl groups having 1 to 4 carbon atoms, and X^1 to X^3 mean individually an ethylene group or vinylene group.